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mittee consisting of Messrs. Cassin, Townsend and Woodhouse.

Dr. Morton read a description of two new species of fossil Echinodermata from the Eocene of the United States. Referred to Prof. Johnson, Mr. R. C. Taylor and Dr. Zantzinger.

Meeting for Business, April 28, 1846.

VICE PRESIDENT MORTON in the Chair.

The Committee to whom was referred the following paper, read 3d of March last, reported in favor of publication.

On the Fossil Squalidæ of the United States.

By ROBERT W. GIBBES, M. D., of Columbia, South Carolina.

Upon a careful comparison of the descriptions and plates of the admirable work of Agassiz, "*Sur les Poissons Fossiles*," belonging to the Library of the South Carolina College, I have identified in my collection a large number of the teeth of *Squalides*. I have three which I cannot refer to any of his species, and therefore consider them probably new.

1. *Charcharodon megalodon*, Agassiz. Eocene, S. C.

Agassiz refers this to the *Miocene*, as Lord Enniskillen has a specimen from the "molasse" of Switzerland, and Mr. Charlesworth notices it from "the crag" of England. My finest specimen measures six inches in length, and five across the root.

2. *Charcharodon rectideus*, Agassiz. Post Pliocene, S. C., from Eocene.

This measures five inches in length, and four and a quarter inches across the base of the root. It was sent to me as found in an excavation on the suburbs of Charleston, for the foundation of a building at the rail road depot. Beds of *Post Pliocene* underlie that city, and among the shells of that formation these teeth (two) were found. If no mistake occurred, (as my friend had them twelve years,) and they were actually found here, they were probably washed down from the *Eocene* marl, which is only a few miles off. A fine *C. megalodon* was found in the harbor of Charleston, and occasionally other *Eocene* and *Miocene* remains are found on the beaches close by.

I have classed it with my *Eocene* specimens, as Agassiz, from a specimen in the "Museum d'Histoire Natnrelle de Paris," has referred it to this period. He says: "La nature des fragmens attachés a l'os basilaire d'une

de ces dents me fait presumer que c'est du calcaire grossiere." Note, p. 250, tom. iii.

3. *Charcharodon leptodon*, Ag. Eocene, S. C. Locality unknown. Ag.
4. *Charcharodon megalotis*, Ag. Eocene, S. C. Tertiary. Ag.
5. *Charcharodon productus*, Ag. Eocene, S. C. Swiss molasse. Eocene Ag.
6. *Charcharodon sulcidens*, Ag. Eocene, S. C. Tertiary. Ag.
7. *Charcharodon angustidens*, Ag. Eocene, S. C. Tertiary of Kressen-burg. Ag.
8. *Charcharodon heterodon*, Ag. Eocene, S. C. Tertiary of Normandy. Ag.
9. *Charcharodon semiserratus*, Ag. Eocene, S. C. Isle of Malta. Ag.
10. *Charcharodon turgidus*, Ag. Eocene, S. C. Sands of Flonheim. Miocene. Ag.
11. *Charcharodon lanceolatus*, Ag. Eocene, S. C. Ferruginous sand, Kressenburg. Ag.
12. *Charcharodon polygurus*, Ag. Eocene, S. C. Swiss molasse. Eocene. Ag.
13. *Charcharodon auriculatus*, Ag. Eocene, S. C. Dax. Miocene. Ag.
14. *Charcharodon Mortoni*, Gibbs. Eocene, S. C. New.

This tooth is four inches long, three inches across the root, *an inch and a half thick* from the most prominent part of its anterior surface; it is inequilateral, with fine uniform dentelures; both the anterior and posterior surfaces are convex, though the former treble so; the enamel is thin and cracked in striæ, similar to the *Lamna elegans*; the root or basilar bone is very thick and concave; the right extremity slightly exceeding the left.

I propose to name this fine species after Dr. S. G. Morton, who was the first to illustrate our Tertiary Geology.

15. *Corax (galeus) pristodontus*, Ag. Eocene, S. C. Chalk of Maestricht. Ag.
16. *Corax (galeus) (new?)* Eocene, S. C.
17. *Galeocerdo minor*, Ag. Eocene, S. C. Swiss molasse. Ag.
18. *Galeocerdo latidens*, Ag. Eocene, S. C. Unknown. Ag.
19. *Hemipristis serra*, Ag. Eocene, S. C. Swiss molasse. Ag.
20. *Hemipristis paucidens*, Ag. Eocene, S. C. Unknown. Ag.
21. *Lamna elegans*, Ag. Eocene, S. C. Crag and London clay. Ag.
22. *Lamna crassidens*, Ag. Eocene, S. C. Inferior oolite, &c. Ag.
23. *Lamna Hopei*, Ag. Eocene, S. C. Isle of Sheppy. Eocene. Ag.
24. *Lamna cuspidata*, Ag. Eocene, S. C. Swiss molasse. Ag.
25. *Otodus macrotus*, Ag. Cretaceous, N. J. London clay. Ag.
26. *Otodus appendiculatus*, Ag. Eocene, S. C. Chalk. Ag.
27. *Otodus apiculatus*, Ag. Eocene, S. C. Calcaire de Veteuil. Eocene? Ag.
28. *Otodus obliquus*, Ag. Eocene, S. C. Characteristic of London clay. Ag.

29. *Oxyrrhina ziphodon*, Ag. Eocene and Miocene, S. C. Gypsum of Montmartre. Ag.
30. *Oxyrrhina hastalis*, Ag. N. Jersey, and Eocene, S. C. Swiss molasse Eocene, Ag.
31. *Oxyrrhina mantelli*, Ag. Eocene, S. C. Chalk of England. Ag.
32. *Oxyrrhina*, (new ?) Eocene, S. C.
33. *Oxyrrhina*, (new ?) Eocene, S. C.
34. *Oxyrrhina retroflexa*, Ag. Miocene, S. C. Locality unknown. Ag.
35. *Pristis acutidens*, Ag. Eocene, S. C. Bagshot, England. Eocene. Ag.

RAYS.

36. 1. *Myliobates micropleurus*, Ag. Eocene, S. C. London clay. Ag.
2. *Myliobates Owenii*, Ag. Eocene, S. C. London clay. Ag.

PALATUM PISCUM.

I have several specimens of what is figured by W. Smith among the specimens from the crag of England (in his prints on colored paper of "Strata Identified by Organized Fossils," 1816,) as *palates of fishes*. I suppose these are what Mr. I. Lea speaks of (in Contributions to Geology, p. 203,) as found in the sand of Claiborne, and as figured by Brander. Some of them are mineralized by iron, and others calcareous; all which I have are from the Eocene.

Among my collection from the *Eocene of South Carolina*, I have several fragments of claws and casts of varieties of *Cancer*. Two specimens are well marked, and resemble closely *Cancer punctulatus*, Desmarest, and *Cancer Leachii*, Desm.

I have lately procured a tolerably good specimen of the remarkable fossil sent to the Academy by Dr. E. Ravenel, of S. Carolina, resembling somewhat a Belemnite. I would respectfully suggest the probability of its being the spine of *Myriacanthus paradoxus*, (Agassiz,) deprived, by attrition, of its tubercles. Agassiz, pl. 6, vol. iii, and p. 38, vol. iii.

The Committee on Mr. Wm. Gambel's paper, read at last meeting, reported in favour of publication.

Remarks on the Birds observed in Upper California.

By WILLIAM GAMBEL.

ACCIPITRES.

Cathartes Californianus, Shaw. Californian Vulture.

This immense and interesting bird, rivalling the condor in size, and confined exclusively to the Pacific coast, is particularly abundant in California during winter; when they probably come from Oregon, as they are said to disappear from the region of the Columbia at that time.

It is not always so shy and difficult of approach, as has been reported, and like the Turkey buzzard, it is most so when solitary, but often ventures to the neighbourhood of the towns without much fear of man.*

It is very voracious, and nothing less than the carcase of a horse or cow can make a meal for many of them; but such food is abundant, at least in the fall of the year, where the dry pasturage has been destroyed by fire, accidentally or intentionally, by the Indians. These fires extend over large tracts of country, and in consequence many cattle perish, as well as from the summer drought.

It is not uncommon to see them assemble with the gulls, and greedily devour the carcase of a whale which had been cast ashore; they will also frequently pursue wounded game.

The male in perfect plumage has the skin of the head and neck orange-yellow, and the irides carmine.

Cathartes aura, Linn. Turkey Vulture.

The Turkey buzzard is quite as abundant and familiar in California as it is in the southern parts of the United States. It is seldom molested, on account of its usefulness in ridding the neighbourhood of the towns and farm houses of the refuse of the cattle, which are slaughtered in great numbers.

*I may mention here an instance of the great disposition in the Vultures to become domesticated, and to show how much they differ in character from the other Accipitres with which they are classified. A Condor, which I saw in Valparaiso, Chili, during the early part of last year, was allowed to roam the city at large, and from its remarkable docility received kind treatment from every one. It would follow and walk alongside of a person like a dog, for a considerable distance, and offer no resistance to being handled or have its feathers or wings smoothed down. It would ascend a long hill leading to a part of the city where the foreigners resided, and when tired of the place, or after having obtained all it could procure to eat, it would spread its large wings and soar down to the city, alighting perhaps on a steeple or other lofty point. It would receive the caresses of children, and permit them to beat it with switches, or even to attempt to get upon its back. It was fond of thrusting its bill into my pocket, and under the straps of my pantaloons, at the same time shutting its eyes and allowing me to rub and scratch its head. In fact, I think that I have never met with any bird which exhibited more tameness or greater confidence in man than this large and remarkable Condor. I was informed that several other similar instances had been known there.

The Carrion Crow (*C. atratus*, Wils.) is very common about the Gulf of California, and at Mazatlan, particularly, may be seen around the town in large gangs. In company with them I think I have also seen that new and perfectly distinct species detected in the collection of the Academy, and described by my friend Mr. Cassin.* Probably both may be found in Upper California.

Haliaeetus leucocephalus, Linn. Bald Eagle.

Abundant; in winter feeding on the ducks and geese which cover the plains in immense flocks.

I have found the nest on high isolated rocks along the coast, containing eggs as early as the middle of February.

An interesting circumstance connected with this noble eagle, as the emblem of our country, is, that it was held sacred by the native tribes of Indians of the coast and interior of California, as I have frequently been informed.

Another large brown Eagle, the *Aquila réal*, (probably the bird of Washington,) is said by the Indians and others to be occasionally observed here.

Pandion Carolinensis, Gmel. Fish Hawk.

Common along the coast, particularly the rocky islands, where they breed. At Santa Catalina I found them nesting on the precipitous cliffs, in February, along with the bald eagles.

Buteo Sancti Johannis, Gmel. Rough-legged Buzzard.

Common in the prairie-valleys during winter, keeping much on the ground. The adult in his dark livery, although frequently seen, is much less common than the young.

Buteo borealis, Gmel. Red-tailed Buzzard.

Very abundant; as also in the interior in the ranges of the Rocky mountains. *Buteo lineatus*, Gmel. Red-shouldered Buzzard.

The shrill *kee ou* of this handsome species may be heard at all times around the vineyards and farms of the lower portions of Upper California, where it is more abundant than about Monterey.

Buteo Swainsoni, Bonap. Rocky Mountain Buzzard.

Buteo montana, Nutt. Man., p. 112, 2d ed.

B. vulgaris, Aud., pl. 372, et auc.

This species was first brought from the fur countries by Richardson, who considered it identical with the European *Buteo vulgaris*.

Bonaparte in his comparative list of the birds of Europe and America, distinguishes it by the specific name of *Swainsoni*, quoting Audubon's description and plate of the specimen brought from Oregon by Townsend.

My friend Nuttall retains the common buzzard as an inhabitant of the fur countries, on the authority of Richardson, and refers Bonaparte's synonym to that species, describing this, which he considers sufficiently distinct, under the name of White-throated Buzzard, *Buteo montanus*.

Richardson describes the nest as containing from three to five eggs, equal

* *Cathartes Burrovianus*, Cassin, Proc. Acad. Nat. Sciences, vol. 2, p. 212.

in size to those of the common fowl, and of a greenish white colour, with a few dark brown blotches at the thick end. Townsend, who brought it from the Rocky mountains, found it breeding there in July, the nest containing two white eggs.

A. L. Heermann, M.D., during a recent trip to the prairies, found this species breeding near the Platte River, and also procured the eggs, of which he kindly furnished me with a drawing and description. It is considerably smaller than that of the European buzzard, and differs from it in being pure white, with a few dark brown blotches on the smaller end, while the latter is of a bluish or greenish tinge, with faded marks of a neutral tint, apparently sunk into the shell, and scattering blotches of dark brown. The account given me of its nest by Dr. Heermann agrees so exactly with that of Richardson, that I have no doubt of its being the same bird.

Elanus leucurus, Bonap. White-tailed Elanus.

This active, beautiful hawk, is not unfrequent in California. At the mission of St. John, between Monterey and St. Francisco, I procured three specimens in one day. It flies low and circling over the plains in the manner of a marsh hawk, feeding on the small birds which are so abundant on the ground. It is easy of approach when perched on trees, and utters a very loud shrill cry, particularly when wounded and caught, fighting viciously.

Falco anatum, Bonap. Peregrine Falcon.

Occasionally seen along the coast, nesting on cliffs near the sea.

Falco Columbarius, Linn. Pidgeon Falcon.

Common throughout the Western coast.

Cercneis Sparverius, Linn. Sparrow Hawk.

This familiar little species is abundant throughout the country.

Astur Fuscus, Gmel. Sharp-shinned hawk.

Our pugnacious and daring little marauder appears to be distributed over the whole of N. America.

Astur Cooperii, Bonap. Cooper's Hawk.

The most remarkable similarity exists between the plumage of this species and the former in every age; and although the great difference in size renders it impossible to mistake them, I think that if we depended upon the plumage alone, no sufficiently distinguishing marks could be given. We find, in fact, in every department of natural science, that those characters, which in one genus or family can be relied upon as showing specific differences, are, in others, almost useless, or at best perplexing.

This bird is common throughout the Pacific coast.

Strigiceps uliginosus, Gmel. Marsh Hawk.

In low valleys or marshes throughout California, the Rocky mountains, and New Mexico, we are sure to find this widely disseminated species.

Bubo Virginianus, Gmel. Great Horned, or Cat Owl.

Common in the wooded regions of Upper California.

Athene socialis, Nobis. Barrowing Owl.

Strix cucularia, Bonap., Aud., Nutt.

This bird, which hitherto has been considered the same throughout the wide range of North and South America, may, I think, be separated on as good grounds as many of the owls which are generally admitted to be distinct. It is unnecessary to repeat here the excellent descriptions which have been given by Bonaparte and Audubon of N. American specimens of the burrowing owl. I shall merely state wherein I think ours differs from the S. American species.

I conceive it to differ in the general colour, being lighter in our species. with the markings and quills usually of a pale yellowish or cinnamon hue while in the other the colour is always much deeper and approaching dusky.

The most marked difference exists in the feet and legs, which are in ours slender and delicate, while in the other they are longer and much stouter.

The wings are shorter, and have the first and fifth quills equal, if anything, the first longest: in the S. American the fifth quill is considerably longer than the first.

The bill in ours is smaller in every way, and of a dusky horn colour, except at the ridge and edges; in the other it appears to be dusky only at the base.

But how can either of these agree with the description given of the Coquimbo owl, by Brisson, as being so much larger, with the tail of a dirty-white colour and immaculate?

I have seen this bird in New and Old Mexico, on the Rocky mountains, and in California; in each place presenting little difference in its habits. It always lives in burrows in the ground, either solitary, as I have frequently seen it, or in small companies. If it can avail itself of the labours of other animals, it will always do so, so that it is a constant interloper in the habitations of the prairie dogs, and in California in those of the large ground squirrel, which is there so very common. It however often digs for itself, and lives in scattered companies of four or five.

Nuttall is, I think, mistaken with regard to its migrating from California in August. I have seen it there at all periods of the year.

On the prairies its note is said to resemble that of Marmots, with which it is associated. The account which Vieillot gives of its nocturnal habits and note, has been doubted by Bonaparte and my friend Nuttall. During the breeding season, while sleeping near their burrows, I have been awakened by its low, measured and solemn cry, uttered much in the manner of its congeners, but peculiarly solemn.

Nyctale Acadica, Gmel. Little Night Owl.

I procured but one specimen of this species at Monterey in October.

Strix pratnicola, Bonap. Barn Owl.

This delicate feathered and familiar fowl, which, hitherto, I believe has not been known to exist west of the Atlantic coast, I found very abundantly in California, and presenting all the habits ascribed to its European relative. Its favorite resort is in the neighborhood of the towns and ruined Missions, although it may be found also about farm houses, and occasionally in the prairie valleys, which furnish it with abundance of mice and other small animals for

subsistence. It makes its nest under the tiled roofs of the houses of the towns. numbers under one roof, and shows but little fear when approached. I have scarcely ever visited a mission without disturbing some of these birds, which were roosting about the altar, chandelier, &c., of the chapel, and hearing the benediction of the Padre for drinking all the oil out of the lamps. Every where in California, when speaking of it, we are sure to be told of its propensity for drinking the sacred oil ; with what truth I cannot say.

The specimens which I have examined agree in every respect with those from this side of the continent, and present the constant characters given by Audubon to distinguish it from the European species.

(To be continued.)

The following gentlemen were elected Correspondents of the Academy.

William M. Baird, of Reading, Pa.

William Gourlie, Jr., Esq., of Glasgow, Scotland.

Nicolai Aall, of Christiana, Sweden,

And Mr. Lewis Germain, of Burlington, N. J., was elected a Member of the same.